

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Previously Presented): A fixing apparatus, comprising:

a heater extending in a direction orthogonal to a direction in which a same recording sheet carrying an unfixed toner image having at least two different sized toner images formed with toner in accordance with image information is transferred;

an endless belt configured to be rotated with an inner surface thereof sliding over a surface of said heater;

a pressure roller arranged at a position opposite to said heater relative to said endless belt, said pressure roller being held for rotation in contact with said endless belt under pressure to form a nip therebetween; and

a heater controller configured to control the heater to produce a different amount of heat for corresponding different sized toner images on the same recording sheet in accordance with at least one of a size and a thickness of the different sized toner images on the same recording sheet,

wherein, when said recording sheet is brought to said nip with said unfixed toner image facing said endless belt, said pressure roller applies pressure to said recording sheet against said endless belt so that said unfixed toner image is fixed on said recording sheet with heat by said heater as said recording sheet is transferred by movement of said endless belt and said pressure roller.

Claim 2 (Previously Presented): A fixing apparatus as defined in Claim 1, wherein said toner includes a resin as a main adhesive agent and has properties of a softening or melting point in a range between 50°C and 160°C and a viscosity in a range between 10 (c poise) and 10^{13} (c poise) under a temperature above said softening or melting point.

Claim 3 (Original): A fixing apparatus as defined in Claim 1, wherein said heater includes at least two parallel heating elements, each of which has a line shape orthogonal to said direction in which said recording sheet is transferred.

Claim 4 (Original): A fixing apparatus as defined in Claim 3, wherein said heater controller alternately energizes said at least two parallel heating elements with alternating pulses.

Claim 5 (Original): A fixing apparatus as defined in Claim 3, wherein said at least two parallel heating elements are distant from each other by 10 mm or less.

Claim 6 (Previously Presented): A fixing apparatus as defined in Claim 3, wherein each of said at least two parallel heating elements has a width in a range between 0.01 mm and 5 mm.

Claim 7 (Original): A fixing apparatus as defined in Claim 1, wherein said heater includes a plurality of heating elements arranged in line in a direction orthogonal to said direction in which said recording sheet is transferred.

Claim 8 (Original): A fixing apparatus as defined in Claim 7, wherein each of said plurality of heating elements includes a thermal head.

Claim 9 (Previously Presented): A fixing apparatus as defined in Claim 7, wherein said heater controller selectively energizes said plurality of heating elements.

Claim 10 (Original): A fixing apparatus as defined in Claim 1, further comprising a cooling mechanism configured to cool said toner image after said toner image is fixed with heat by said heater on said recording sheet.

Claim 11 (Original): A fixing apparatus as defined in Claim 1, further comprising a guide roller arranged at a position downstream from said heater in said direction in which said recording sheet is transferred, said guide roller being configured to support said endless belt and to serve as a cooling mechanism configured to cool said toner image after said toner image is fixed with heat by said heater on said recording sheet.

Claim 12 (Original): A fixing apparatus as defined in Claim 1, further comprising a mechanism configured to cause said endless belt to tightly hold said toner image and said recording sheet together until said toner image is fixed on said recording sheet after said toner image is subjected to the heat of said heater.

Claim 13 (Original): A fixing apparatus as defined in Claim 1, wherein said heater controller stops energizing said heater during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heater.

Claim 14 (Original): A fixing apparatus as defined in Claim 1, wherein said heater controller energizes said heater during a time when a region of said toner image in said recording sheet is brought close to said heater.

Claim 15 (Original): A fixing apparatus as defined in Claim 1, wherein said heater controller energizes said heater with an electric power reduced by 5 % or more during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heater.

Claim 16 (Previously Presented): A fixing apparatus, comprising:

heating means for heating an unfixed toner image having at least two different sized toner images formed with toner on a same recording sheet in accordance with image information, said heating means extending in a direction orthogonal to a direction in which said recording sheet is transferred;

endless belt means for transferring the recording sheet and being rotated with an inner surface thereof sliding over a surface of said heating means;

pressure roller means for applying pressure to the heating means and being held for rotation in contact with said endless belt means under pressure to form a nip therebetween, said pressure roller means being arranged at a position opposite to said heating means relative to said endless belt means; and

heater controlling means for controlling the heating means to produce a different amount of heat for corresponding different sized toner images on the same recording sheet in accordance with at least one of a size and a thickness of the different sized toner images on the same recording sheet,

wherein, when said recording sheet is brought to said nip with said unfixed toner image facing said endless belt means, said pressure roller means applies pressure to said recording sheet against said endless belt means so that said unfixed toner image is fixed on said recording sheet with heat by said heating means as said recording sheet is transferred by movement of said endless belt means and said pressure roller means.

Claim 17 (Previously Presented): A fixing apparatus as defined in Claim 16, wherein said toner includes a resin as a main adhesive agent and has properties of a softening or melting point in a range between 50°C and 160°C and a viscosity in a range between 10 (c poise) and 10^{13} (c poise) under a temperature above said softening or melting point.

Claim 18 (Original): A fixing apparatus as defined in Claim 16, wherein said heating means includes at least two parallel heating elements, each of which has a line shape orthogonal to said direction in which said recording sheet is transferred.

Claim 19 (Original): A fixing apparatus as defined in Claim 18, wherein said heater controlling means alternately energizes said at least two parallel heating elements with alternating pulses.

Claim 20 (Original): A fixing apparatus as defined in Claim 18, wherein said at least two parallel heating elements are distant from each other by 10 mm or less.

Claim 21 (Previously Presented): A fixing apparatus as defined in Claim 18, wherein each of said at least two parallel heating elements has a width in a range between 0.01 mm and 5 mm.

Claim 22 (Original): A fixing apparatus as defined in Claim 16, wherein said heating means includes a plurality of heating elements arranged in line in a direction orthogonal to said direction in which said recording sheet is transferred.

Claim 23 (Original): A fixing apparatus as defined in Claim 22, wherein each of said plurality of heating elements includes a thermal head.

Claim 24 (Previously Presented): A fixing apparatus as defined in Claim 22, wherein said heater controlling means selectively energizes said plurality of heating elements.

Claim 25 (Original): A fixing apparatus as defined in Claim 16, further comprising cooling means for cooling said toner image after said toner image is fixed with heat by said heating means on said recording sheet.

Claim 26 (Previously Presented): A fixing apparatus as defined in Claim 16, further comprising guide roller means for supporting said endless belt means and serving as cooling means for cooling said toner image after said toner image is fixed with heat by said heating means on said recording sheet, said guide roller means being arranged at a position downstream from said heating means in said direction in which said recording sheet is transferred.

Claim 27 (Original): A fixing apparatus as defined in Claim 16, further comprising means for causing said endless belt means to tightly hold said toner image and said recording sheet together until said toner image is fixed on said recording sheet after said toner image is subjected to the heat of said heating means.

Claim 28 (Original): A fixing apparatus as defined in Claim 16, wherein said heater controlling means stops energizing said heating means during a time when a non-image

region between two adjacent toner image lines in said recording sheet is brought close to said heating means.

Claim 29 (Original): A fixing apparatus as defined in Claim 16, wherein said heater controlling means energizes said heating means during a time when a region of said toner image in said recording sheet is brought close to said heating means.

Claim 30 (Original): A fixing apparatus as defined in Claim 16, wherein said heater controlling means energizes said heating means with an electric power reduced by 5 % or more during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heating means.

Claim 31 (Previously Presented): A fixing method of image forming, comprising the steps of:

forming a nip between an endless belt and a pressure roller which are held for rotation in contact with each other under pressure;

providing a heater at position inside said endless belt, in contact with said endless belt, and opposite to said pressure roller relative to said endless belt, said heater extending in a direction orthogonal to a direction in which a same recording sheet having an unfixed toner image having at least two different sized toner images formed with toner in accordance with image information is transferred;

rotating said endless belt and said pressure roller, said endless belt sliding over a surface of said heater by rotation;

transferring said recording sheet to said nip, said recording sheet being in an orientation in which said toner image faces said endless belt; and

controlling the heater to produce a different amount of heat for corresponding different sized toner images on the same recording sheet in accordance with at least one of a size and a thickness of the different sized toner images on the same recording sheet when said toner image is brought to said heater.

Claim 32 (Previously Presented): A fixing method as defined in Claim 31, wherein said toner includes a resin as a main adhesive agent and has properties of a softening or melting point in a range between 50°C and 160°C and a viscosity in a range between 10 (c poise) and 10^{13} (c poise) under a temperature above said softening or melting point.

Claim 33 (Original): A fixing method as defined in Claim 31, wherein said heater includes at least two parallel heating elements, each of which has a line shape orthogonal to said direction in which said recording sheet is transferred.

Claim 34 (Currently Amended): A fixing method as defined in Claim 33, wherein said ~~charging~~ controlling alternately energizes said at least two parallel heating elements with alternating pulses.

Claim 35 (Original): A fixing method as defined in Claim 33, wherein said at least two parallel heating elements are distant from each other by 10 mm or less.

Claim 36 (Previously Presented): A fixing apparatus as defined in Claim 33, wherein each of said at least two parallel heating elements has a width in a range between 0.01 mm and 5 mm.

Claim 37 (Original): A fixing method as defined in Claim 31, wherein said heater includes a plurality of heating elements arranged in line in a direction orthogonal to said direction in which said recording sheet is transferred.

Claim 38 (Original): A fixing method as defined in Claim 37, wherein each of said plurality of heating elements includes a thermal head.

Claim 39 (Currently Amended): A fixing method as defined in Claim 37, wherein said ~~charging~~ controlling step selectively energizes said plurality of heating elements.

Claim 40 (Previously Presented): A fixing method as defined in Claim 31, further comprising the step of cooling said toner image after said toner image is fixed with heat by said heater on said recording sheet.

Claim 41 (Previously Presented): A fixing method as defined in Claim 31, further comprising the step of providing a guide roller for supporting said endless belt and for serving as a cooling member for cooling said toner image after said toner image is fixed with heat by said heater on said recording sheet, said guide roller being arranged at a position downstream from said heater in said direction in which said recording sheet is transferred.

Claim 42 (Previously Presented): A fixing method as defined in Claim 31, further comprising the step of providing a member for causing said endless belt to tightly hold said toner image and said recording sheet together until said toner image is fixed on said recording sheet after said toner image is subjected to the heat of said heater.

Claim 43 (Currently Amended): A fixing method as defined in Claim 31, wherein said ~~charging~~ controlling step stops energizing said heater during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heater.

Claim 44 (Currently Amended): A fixing method as defined in Claim 31, wherein said ~~charging~~ controlling step energizes said heater during a time when a region of said toner image in said recording sheet is brought close to said heater.

Claim 45 (Currently Amended): A fixing method as defined in Claim 31, wherein said ~~charging~~ controlling step energizes said heater with an electric power reduced by 5% or more during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heater.

Claim 46 (Previously Presented): An image forming apparatus, comprising:
an image forming mechanism configured to form a toner image having at least two different sized toner images with toner on a same recording sheet in accordance with image information;

a heater extending in a direction orthogonal to a direction in which said recording sheet carrying an unfixed toner image formed by said image forming mechanism is transferred;

an endless belt configured to be rotated with an inner surface thereof sliding over a surface of said heater;

a pressure roller arranged at a position opposite to said heater relative to said endless belt, said pressure roller being held for rotation in contact with said endless belt under pressure to form a nip therebetween; and

a heater controller configured to control the heater to produce a different amount of heat for corresponding different sized toner images on the same recording sheet in accordance with at least one of a size and a thickness of the different sized toner images on the same recording sheet,

wherein, when said recording sheet is brought to said nip with said unfixed toner image facing said endless belt, said pressure roller applies pressure to said recording sheet against said endless belt so that said unfixed toner image is fixed on said recording sheet with heat by said heater as said recording sheet is transferred by movement of said endless belt and said pressure roller.

Claim 47 (Previously Presented): An image forming apparatus as defined in Claim 46, wherein said toner includes a resin as a main adhesive agent and has properties of a softening or melting point in a range between 50°C and 160°C and a viscosity in a range between 10 (c poise) and 10^{13} (c poise) under a temperature above said softening or melting point.

Claim 48 (Previously Presented): An image forming apparatus as defined in Claim 46, wherein said heater includes at least two parallel heating elements, each of which has a line shape orthogonal to said direction in which said recording sheet is transferred.

Claim 49 (Currently Amended): An image forming apparatus as defined in Claim 48, ~~[[i]]~~ wherein said heater controller alternately energizes said at least two parallel heating elements with alternating pulses.

Claim 50 (Original): An image forming apparatus as defined in Claim 48, wherein said at least two parallel heating elements are distant from each other by 10 mm or less.

Claim 51 (Previously Presented): An image forming apparatus as defined in Claim 48, wherein each of said at least two parallel heating elements has a width in a range between 0.01 mm and 5 mm.

Claim 52 (Original): An image forming apparatus as defined in Claim 46, wherein said heater includes a plurality of heating elements arranged in line in a direction orthogonal to said direction in which said recording sheet is transferred.

Claim 53 (Original): An image forming apparatus as defined in Claim 52, wherein each of said plurality of heating elements includes a thermal head.

Claim 54 (Previously Presented): An image forming apparatus as defined in Claim 52, wherein said heater controller selectively energizes said plurality of heating elements.

Claim 55 (Original): An image forming apparatus as defined in Claim 46, further comprising a cooling mechanism configured to cool said toner image after said toner image is fixed with heat by said heater on said recording sheet.

Claim 56 (Original): An image forming apparatus as defined in Claim 46, further comprising a guide roller arranged at a position downstream from said heater in said direction in which said recording sheet is transferred, said guide roller being configured to support said endless belt and to serve as a cooling mechanism configured to cool said toner image after said toner image is fixed with heat by said heater on said recording sheet.

Claim 57 (Original): An image forming apparatus as defined in Claim 46, further comprising a mechanism configured to cause said endless belt to tightly hold said toner image and said recording sheet together until said toner image is fixed on said recording sheet after said toner image is subjected to the heat of said heater.

Claim 58 (Original): An image forming apparatus as defined in Claim 46, wherein said heater controller stops energizing said heater during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heater.

Claim 59 (Original): An image forming apparatus as defined in Claim 46, wherein said heater controller energizes said heater during a time when a region of said toner image in said recording sheet is brought close to said heater.

Claim 60 (Original): An image forming apparatus as defined in Claim 46, wherein said heater controller energizes said heater with an electric power reduced by 5 % or more during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heater.

Claim 61 (Previously Presented): An image forming apparatus, comprising:

image forming means for forming a toner image having at least two different sized toner images with toner on a recording sheet in accordance with image information;

heating means for heating an unfixed toner image formed with toner on a same recording sheet in accordance with image information, said heating means extending in a direction orthogonal to a direction in which said recording sheet is transferred;

endless belt means for transferring the recording sheet and being rotated with an inner surface thereof sliding over a surface of said heating means;

pressure roller means for applying pressure to the heating means being held for rotation in contact with said endless belt means under pressure to form a nip therebetween, said pressure roller means being arranged at a position opposite to said heating means relative to said endless belt means; and

heater controlling means for controlling the heating means to produce a different amount of heat for corresponding different sized toner images on the same recording sheet in accordance with at least one of a size and a thickness of the different sized toner images on the same recording sheet,

wherein, when said recording sheet is brought to said nip with said unfixed toner image facing said endless belt means, said pressure roller means applies pressure to said recording sheet against said endless belt means so that said unfixed toner image is fixed on said recording sheet with heat by said heating means as said recording sheet is transferred by movement of said endless belt means and said pressure roller means.

Claim 62 (Previously Presented): An image forming apparatus as defined in Claim 61, wherein said toner includes a resin as a main adhesive agent and has properties of a softening or melting point in a range between 50°C and 160°C and a viscosity in a range

between 10 (c poise) and 10^{13} (c poise) under a temperature above said softening or melting point.

Claim 63 (Original): An image forming apparatus as defined in Claim 61, wherein said heating means includes at least two parallel heating elements, each of which has a line shape orthogonal to said direction in which said recording sheet is transferred.

Claim 64 (Original): An image forming apparatus as defined in Claim 63, wherein said heater controlling means alternately energizes said at least two parallel heating elements with alternating pulses.

Claim 65 (Original): An image forming apparatus as defined in Claim 63, wherein said at least two parallel heating elements are distant from each other by 10 mm or less.

Claim 66 (Previously Presented): An image forming apparatus as defined in Claim 63, wherein each of said at least two parallel heating elements has a width in a range between 0.01 mm and 5 mm.

Claim 67 (Original): An image forming apparatus as defined in Claim 61, wherein said heating means includes a plurality of heating elements arranged in line in a direction orthogonal to said direction in which said recording sheet is transferred.

Claim 68 (Original): An image forming apparatus as defined in Claim 67, wherein each of said plurality of heating elements includes a thermal head.

Claim 69 (Previously Presented): An image forming apparatus as defined in Claim 67, wherein said heater controlling means selectively energizes said plurality of heating elements.

Claim 70 (Original): An image forming apparatus as defined in Claim 61, further comprising cooling means for cooling said toner image after said toner image is fixed with heat by said heating means on said recording sheet.

Claim 71 (Previously Presented): An image forming apparatus as defined in Claim 61, further comprising guide roller means for supporting said endless belt means and serving as cooling means for cooling said toner image after said toner image is fixed with heat by said heating means on said recording sheet, said guide roller means being arranged at a position downstream from said heating means in said direction in which said recording sheet is transferred.

Claim 72 (Original): An image forming apparatus as defined in Claim 61, further comprising means for causing said endless belt means to tightly hold said toner image and said recording sheet together until said toner image is fixed on said recording sheet after said toner image is subjected to the heat of said heating means.

Claim 73 (Original): An image forming apparatus as defined in Claim 61, wherein said heater controlling means stops energizing said heating means during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heating means.

Claim 74 (Original): An image forming apparatus as defined in Claim 61, wherein said heater controlling means energizes said heating means during a time when a region of said toner image in said recording sheet is brought close to said heating means.

Claim 75 (Original): An image forming apparatus as defined in Claim 61, wherein said heater controlling means energizes said heating means with an electric power reduced by 5 % or more during a time when a non-image region between two adjacent toner image lines in said recording sheet is brought close to said heating means.